

THE WEATHER OF THE MONTH.

By ALFRED J. HENRY, Professor of Meteorology.

GENERAL CHARACTERISTICS.

A wintry month, with much boisterous weather, yet not so severe as the corresponding month a year ago. There were a number of alternating periods of fair and stormy weather, and many marked temperature changes. In New England the heavy rains of the 13th relieved a rather severe and prolonged drought and caused the rivers and small streams to pass to a flood stage within a very short time.

A cold wave of considerable severity moved southeastward from the northeastern Rocky Mountain slope on the 15th, reaching the Florida Peninsula on the morning of the 18th and Cuba and Puerto Rico on the 19th and 20th. The minimum temperatures of the month in the South Atlantic and Gulf States were recorded during the progress of the cold wave.

About the average amount of snow fell, except in California and the southwestern part of the Plateau region.

PRESSURE.

The distribution of monthly mean pressure is graphically shown on Chart IV, and the numerical values are given in Tables I and II.

Mean pressure for the current month was below normal in the Lake region and thence southwesterly to Arizona. It was above normal in the upper Missouri Valley and thence westerly to the Pacific coast. Compared with the preceding month, mean pressure decreased from 0.1 inch and over in the central Rocky Mountain region to about 0.05 inch on the Atlantic coast. In this connection it should be noted that the majority of low area storms originated in the Southwest and passed out of the country by way of the Lake region. The dearth of north Pacific storms, especially those which move along the northern circuit across the Lake region, was rather unusual.

TEMPERATURE OF THE AIR.

The distribution of monthly mean surface temperature, as deduced from the records of about 1,000 stations, is shown on Chart VI.

A much colder month than the one immediately preceding, yet not so cold as February, 1899.

In the interior of the country and on the south Atlantic and Gulf coasts temperature was markedly below normal, the average daily deficiency in some districts being as much as 6°. West of the Rocky Mountains and in New England temperature was from 2° to 4° above normal. The cold wave of the 15-19th carried the line of freezing temperature to the lower third of the Peninsula of Florida on the 19th and brought the coldest weather of the month to Cuba and Puerto Rico. The temperature at Santiago de Cuba fell to 58° on the 19th, and snow fell on the mountains 10 miles distant. The lowest minimum temperatures registered at Weather Bureau stations in Cuba was 49° at Puerto Principe on the 20th and Cienfuegos on the 26th.

The cold wave of the 6-8th, although not so widespread as that of the 15-19th, was quite severe in the Northwest-

ern States. The temperature changes were very great, falls of 50° in less than twenty-four hours, accompanied by high winds and driving snow, were experienced in the front of the cold wave in many localities.

In Canada.—Prof. R. F. Stupart says:

Temperature was above average in British Columbia, Quebec, the Maritime Provinces and the extreme eastern portion of Ontario, and below everywhere else. The greatest departure above average occurred in Cape Breton and Prince Edward Island, amounting to 7°, and the largest deficiency was reported at Prince Albert, amounting to 8°. In Manitoba, Winnipeg was 5° below average, while in northern Ontario Port Arthur was 5° below, and in southern Ontario, Port Stanley was 3° below.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	10	27.4	+ 0.2	+ 2.3	+ 1.2
Middle Atlantic	12	32.7	- 1.8	+ 0.4	+ 0.2
South Atlantic	10	45.6	- 4.0	- 4.2	- 2.1
Florida Peninsula	7	60.0	- 3.0	- 5.2	- 2.6
East Gulf	7	49.4	- 5.1	- 6.1	- 3.0
West Gulf	7	48.4	- 3.1	+ 0.3	+ 0.2
Ohio Valley and Tennessee	12	32.8	- 5.2	- 2.4	- 1.2
Lower Lake	8	23.3	- 3.2	0.0	0.0
Upper Lake	9	14.8	- 4.3	+ 2.3	+ 1.2
North Dakota	7	2.2	- 4.0	+ 10.6	+ 5.3
Upper Mississippi Valley	11	19.5	- 6.5	+ 1.7	+ 0.8
Missouri Valley	10	20.0	- 4.3	+ 5.8	+ 2.9
Northern Slope	7	19.5	- 1.3	+ 11.8	+ 5.9
Middle Slope	6	30.3	- 2.0	+ 6.8	+ 3.4
Southern Slope	6	39.6	- 1.5	+ 4.9	+ 2.4
Southern Plateau	13	43.5	+ 2.1	+ 8.8	+ 4.4
Middle Plateau	9	33.1	+ 4.3	+ 12.4	+ 6.2
Northern Plateau	10	30.3	+ 2.0	+ 12.0	+ 6.0
North Pacific	9	42.0	+ 3.4	+ 7.9	+ 4.0
Middle Pacific	5	51.2	+ 2.1	+ 4.8	+ 2.4
South Pacific	4	55.9	+ 2.5	+ 6.5	+ 3.2

PRECIPITATION.

Precipitation was above the average in eleven of the twenty-one geographic districts, about average in four and below average in the remainder. The month as a whole may be classed as a wet one, except in California and portions of the Ohio and lower Mississippi valleys. Precipitation was greatly in excess of the normal in New England, where destructive floods occurred on the 13th and 14th, and in northwestern Georgia and eastern Alabama. The drought in southern California, reported in the preceding month, continues and threatens to become serious.

The amount and distribution of snowfall is shown by tables and charts at the end of this REVIEW. Generally there was not as much snow as during the corresponding month a year ago. The deficit was most marked in the Plateau region and on the Pacific coast. The Upper Peninsula of Michigan and Wisconsin also received less snow, on the average, than fell in eastern Kansas and northern Missouri.

At the end of the month there was a good covering of snow on the ground in central and eastern Kansas, central Iowa, Missouri, northern Illinois, Michigan, northern Indiana, northern New York, and in Maine, New Hampshire, and Vermont. The lowlands and valleys of the Plateau region were rather destitute of snow for the season of the year.

In Canada.—Professor Stupart says:

Precipitation was below average throughout British Columbia, but elsewhere over the Dominion it was above average, except along the north shore of Lake Superior, and locally in the Northwest Territories and Manitoba. In many portions of Ontario, Quebec, and the Maritime Provinces the average amount was exceeded by from 2 to 3 inches. In British Columbia and the Maritime Provinces the precipi-

tation was largely rain, but in the other portions of Canada it was chiefly snow, several of the falls being decidedly heavy. On the last day of the month over the greater portion of Ontario the depth of snow on the ground was from 20 to 26 inches, and in Quebec and northern New Brunswick it was from 20 to 30 inches. Owing, however, to the heavy snowstorm which was in progress, the amount of snow on the ground on the 28th was considerably increased on March 1 over eastern Ontario and in Quebec. In the Qu'Appelle Valley the snow was 24 inches deep, but in the Territories and Manitoba, generally, it was from 2 to 14 inches in depth.

The total depth of snow for the month, and the amount on the ground at the end of the month are shown by Charts No. VIII and IX, respectively, and the numerical values appear in Table II.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		Inches.	Inches.
New England	10	5.77	162	+2.2	+2.6
Middle Atlantic	12	3.94	118	+0.6	-0.4
South Atlantic	10	4.98	116	+0.6	-0.3
Florida Peninsula	7	3.55	125	+0.7	+1.2
East Gulf	7	7.65	165	+3.0	+0.7
West Gulf	7	2.58	74	-0.9	-1.0
Ohio Valley and Tennessee	12	3.83	91	-0.4	-2.0
Lower Lake	8	3.96	143	+1.2	+1.1
Upper Lake	9	2.26	122	+0.4	-0.3
North Dakota	7	0.44	69	-0.2	-0.7
Upper Mississippi Valley	11	2.52	131	+0.6	0.0
Missouri Valley	10	1.63	123	+0.3	-0.3
Northern Slope	7	0.72	138	+0.2	-0.4
Middle Slope	6	1.00	125	+0.2	-0.4
Southern Slope	6	0.55	58	-0.4	-1.0
Southern Plateau	13	0.82	31	-0.7	-1.5
Middle Plateau	9	0.96	76	-0.3	-1.1
Northern Plateau	10	1.80	93	-0.1	-1.1
North Pacific	9	4.94	88	-0.7	-2.3
Middle Pacific	5	2.16	52	-2.0	-2.6
South Pacific	4	0.07	3	-2.6	-4.0

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 29. Arizona, 7, 19. Arkansas, 4, 20, 21, 28. California, 4, 11, 18. Florida, 4. Georgia, 21. Idaho, 22. Illinois, 3. Indian Territory, 7, 27. Kentucky, 21. Louisiana, 3, 11, 24, 26, 27, 28. Mississippi, 16, 20, 28. Missouri, 3, 4. New Mexico, 7, 15. Oklahoma, 27. Oregon, 2, 6, 7, 8, 10, 11, 13, 14, 18, 19. South Carolina, 21. Tennessee, 8. Texas, 23, 27, 28. Washington, 5, 6, 12, 21, 28.

SLEET.

The following are the dates on which sleet fell in the respective States:

Alabama, 16, 24, 25. Arkansas, 10, 15, 16, 24, 28. Colorado, 6, 11, 13, 23. Connecticut, 25. Delaware, 10. Georgia, 3, 26, 28. Idaho, 11, 21, 22. Illinois, 3, 4, 23, 27, 28. Indiana, 3, 4, 8, 27, 28. Iowa, 3, 4, 7, 8, 14, 21. Kansas, 4, 7, 8, 12, 15, 25, 27. Kentucky, 21, 28. Louisiana, 8, 16, 19. Maine, 4, 5, 9, 12, 13, 22, 23, 25. Maryland, 6, 20, 21, 22, 24, 25, 28. Massachusetts, 4, 5, 8, 9, 22, 24, 25. Michigan, 4, 7, 9, 13, 21. Minnesota, 22. Mississippi, 10, 24, 28. Missouri, 3, 4, 7, 8, 14, 15, 22, 23, 26, 27, 28. Montana, 4, 9, 11, 20, 22, 26. Nebraska, 3, 4, 7, 23, 25. Nevada, 14, 22. New Hampshire, 5, 21, 22, 24, 25, 26. New Jersey, 6, 24. New York, 5, 13, 21, 22, 23, 24, 28. North Carolina, 9, 10, 11, 16, 17, 18, 21, 24, 25, 28. North Dakota, 22. Ohio, 3, 4, 21, 22, 24, 28. Oregon, 6, 7, 13, 14, 20. Pennsylvania, 4, 5, 9, 21, 22, 28. South Carolina, 10, 17, 28. Tennessee, 4, 10, 15, 16, 22, 24, 27. Texas, 11. Utah, 21, 22, 26. Vermont, 4, 17, 22, 25, 27, 28. Virginia, 6, 10, 11, 16, 22, 24, 25, 28. Washington, 2, 6, 12, 14,

18, 20, 21, 27. West Virginia, 4, 5, 12, 21, 22, 23, 24, 27, 28. Wisconsin, 5, 7, 8, 22, 24.

HUMIDITY.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	74	-1	Missouri Valley	74	+3
Middle Atlantic	73	-1	Northern Slope	74	+5
South Atlantic	74	-1	Middle Slope	68	+0
Florida Peninsula	81	-1	Southern Slope	59	+11
East Gulf	73	-5	Southern Plateau	33	+15
West Gulf	70	-3	Middle Plateau	53	+10
Ohio Valley and Tennessee	76	+1	Northern Plateau	74	+4
Lower Lake	78	+1	North Pacific Coast	82	+2
Upper Lake	84	+1	Middle Pacific Coast	78	+0
North Dakota	78	+3	South Pacific Coast	69	-2
Upper Mississippi	80	+3			

SUNSHINE AND CLOUDINESS.

The distribution of sunshine is graphically shown on Chart VII, and the numerical values of average daylight cloudiness, both for individual stations and by geographical districts, appear in Table I.

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	6.0	+0.5	Missouri Valley	5.8	+0.4
Middle Atlantic	5.9	+0.3	Northern Slope	6.0	+1.2
South Atlantic	5.8	+0.5	Middle Slope	4.7	+0.3
Florida Peninsula	4.8	+0.2	Southern Slope	4.0	-0.8
East Gulf	5.6	+0.1	Southern Plateau	2.3	-0.7
West Gulf	5.4	-0.4	Middle Plateau	5.5	+0.7
Ohio Valley and Tennessee	6.9	+0.7	Northern Plateau	7.1	+0.4
Lower Lake	7.2	+0.4	North Pacific Coast	7.6	+0.6
Upper Lake	6.2	-0.1	Middle Pacific Coast	5.0	+0.2
North Dakota	5.5	+0.4	South Pacific Coast	2.9	-1.2
Upper Mississippi	5.9	+0.6			

WIND.

The maximum wind velocity at each Weather Bureau station for a period of five minutes is given in Table I, which also gives the altitude of Weather Bureau anemometers above ground.

Following are the velocities of 50 miles and over per hour registered during the month:

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Abilene, Tex.	20	58	w.	El Paso, Tex.	19	55	sw.
Amarillo, Tex.	7	60	n.	Hatteras, N. C.	25	57	w.
Do.	8	52	n.	Havre, Mont.	6	54	ne.
Do.	23	60	n.	Independence, Cal.	26	66	s.
Do.	27	60	n.	Indianapolis, Ind.	8	54	sw.
Block Island, R. I.	18	68	n.	Jacksonville, Fla.	28	50	s.
Buffalo, N. Y.	25	65	w.	Mount Tamalpais, Cal.	7	51	n.
Carson City, Nev.	14	60	w.	Nantucket, Mass.	18	59	n.
Cheyenne, Wyo.	11	51	w.	New York, N. Y.	5	70	w.
Chicago, Ill.	8	70	sw.	Norfolk, Va.	21	52	se.
Do.	28	52	ne.	Oswego, N. Y.	22	50	se.
Cleveland, Ohio	9	54	w.	St. Louis, Mo.	8	59	sw.
Do.	13	57	w.	Salt Lake City, Utah.	6	60	n.
Do.	25	54	w.	Sioux City, Iowa	8	50	nw.
Denver, Colo.	11	53	nw.	Winnemucca, Nev.	6	60	w.
Duluth, Minn.	8	54	nw.	Woods Hole, Mass.	18	72	nw.
Eastport, Me.	18	64	ne.				

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table VII, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

Thunderstorms.—Reports of 703 thunderstorms were received during the current month as against 708 in 1899 and 266 during the preceding month.

The dates on which the number of thunderstorms for the whole country were most numerous were: 8th, 97; 24th, 85; 21st, 69; 7th, 62.

Reports were most numerous from: Louisiana, 84; Mississippi, 53; Arkansas, 52.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, 9th to 17th.

Reports were most numerous from Illinois, Montana, and Ohio, 3.

In Canada.—Auroras were reported as follows: Minnedosa, 3d, 5th, 9th, 10th, 21st, 27th; Qu'Appelle, 4th; Medicine Hat, 20th, 21st; Swift Current, 4th; Battleford, 3d, 5th, 22d, 25th.

A thunderstorm was reported from Hamilton, Bermuda, on the 23d.

DESCRIPTION OF TABLES AND CHARTS.

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For description of tables and charts see page 26 of REVIEW for January, 1900.